WHAT IS CLAIMED IS:

1. An apparatus comprising a switch which includes:

a base section;

an electrically conductive part supported on said base section;

a membrane which has first and second ends supported at spaced locations on said base section, which has an electrically conductive portion disposed between said ends thereof, which includes between said first and second ends resilient structure capable of yieldably expanding in a direction lengthwise of said membrane in a manner so as to increase an effective length of said membrane, and which is capable of resiliently flexing so that said membrane can move from a first position where said membrane is substantially unflexed and said conductive portion is spaced from said conductive part to a second position where said membrane is flexed and said conductive portion is adjacent said conductive part.

2. An apparatus according to Claim 1, including a dielectric layer disposed over said conductive part, said membrane engaging a side of said dielectric layer opposite from said conductive part when said membrane is in said second position.

3. An apparatus according to Claim 1, wherein said resilient structure includes two expansion sections disposed on opposite sides of said conductive portion.

4. An apparatus according to Claim 3, wherein each said expansion section includes a membrane section which extends transversely of said membrane and has an approximately U-shaped profile.

5. An apparatus according to Claim 4, wherein when said membrane is in said first position, said U-shaped profile of each said membrane section has approximately the shape of a sine wave.

6. An apparatus according to Claim 4, wherein when said membrane is in said first position, said U-shaped profile of each said membrane section includes spaced first and second portions which are approximately straight and extend approximately parallel to each other, and includes a third portion which is approximately straight and extends between ends of said first and second portions approximately perpendicular thereto.

7. An apparatus according to Claim 6, wherein said first and second portions of each said membrane section tilt with respect to said third portion thereof in response to exertion on said membrane of one of a lengthwise contraction force and a lengthwise expansion force.

8. An apparatus according to Claim 6, wherein said first and second portions of each said membrane section extend from opposite ends of said third portion thereof in a direction toward said base section.

9. An apparatus according to Claim 6, wherein said first and second portions of each said membrane section extend from opposite ends of said third portion thereof in a direction away from said base section.

10. An apparatus according to Claim 6, wherein said membrane moves from said first position to said second position, said membrane sections engage said base section before said conductive portion reaches said position adjacent said conductive part, and then a central portion of said membrane between said expansion sections flexes to effect movement of said conductive portion to said position adjacent said conductive part.

11. An apparatus according to Claim 4, wherein said membrane has a central portion extending between said expansion sections, and has outer portions which each extend outwardly from a respective said expansion section on a side thereof opposite from said central portion, said central portion and said outer portions being approximately co-planar when said membrane is in said first position.

12. An apparatus according to Claim 3, wherein each said expansion section includes at least two membrane sections that extend transversely of said membrane and each have approximately a U-shaped profile.

13. An apparatus according to Claim 3, wherein said base section includes a substrate having two conductive posts projecting upwardly from spaced locations thereon, said conductive part being intermediate said posts, and said membrane having ends which are each supported on a respective said post.

14. An apparatus according to Claim 1, including a circuit operable for applying between said electrically conductive part and said electrically conductive portion a first voltage which effects movement of said membrane from said first position to said second position, and for thereafter applying between said electrically conductive part and said electrically conductive portion a second voltage which is less than said first voltage and which is sufficient to maintain said membrane in said second position thereof.

15. A method of switching through use of a switch which includes a base section, an electrically conductive part supported on said base section, and a membrane having first and second ends supported at spaced locations on said base section, and having an electrically conductive portion disposed between said first and second ends thereof, comprising the steps of:

providing between said first and second ends of said membrane resilient structure which is capable of yieldably expanding in a direction lengthwise of said membrane so as to increase an effective length of said membrane; and

responding to an applied voltage between said conductive part and said conductive portion by resiliently flexing said membrane so that said membrane moves from a first position where said membrane is unflexed and said conductive portion is spaced from said conductive part to a second position where said membrane is flexed and said conductive portion is adjacent said conductive part, including the step of effecting expansion of said resilient structure as said membrane is moved from said first position to said second position.

16. A method according to Claim 15, including the steps of:

configuring said membrane so that said resilient structure thereof includes two expansion sections disposed on opposite sides of said conductive portion, each said expansion section including a membrane section which extends transversely of said membrane and which has approximately a U-shaped profile; and

effecting expansion of each of said expansion sections as said membrane is moved from said first position to said second position.

17. A method according to Claim 16, including the step of configuring each said membrane section so that, when said membrane is in said first position, said U-shaped profile thereof has approximately the shape of a sine wave.

18. A method according to Claim 16, including the step of configuring each said membrane section so that, when said membrane is in said first position, said U-shaped profile thereof includes spaced first and second portions which are approximately straight and extend approximately parallel to each other, and includes a third portion which is approximately straight and extend between ends of said first and second portions approximately perpendicular thereto.

19. A method according to Claim 18, including the step of causing each of said first and second portions of each said membrane section to tilt with respect to said third portion thereof in response to the application to said membrane of one of a lengthwise expansion force and a lengthwise contraction force.

20. A method according to Claim 18, including the steps of:

causing said membrane sections to engage said base section during movement of said membrane toward said second position before said membrane reaches said second position; and

thereafter flexing a central portion of said membrane disposed between said expansion sections thereof to effect movement of said conductive portion to said position adjacent said conductive part.

21. A method according to Claim 15, including the step of effecting application of said applied voltage between said electrically conductive part and said electrically conductive portion by applying therebetween a first voltage which effects movement of said membrane from said first position to said second position, and thereafter applying therebetween a second voltage which is lower than said first voltage and which is sufficient to maintain said membrane in said second position thereof.

22. A method of fabricating a switch, comprising the steps of:

forming an electrically conductive part on a base section;

forming over said conductive part a spacer layer having a top surface with a portion that defines one of a groove and a ridge with respect to a remainder of said top surface;

forming over said top surface a membrane layer which has first and second ends engaging spaced portions of said base section disposed on opposite sides of said conductive part, and which has an electrically conductive portion between said first and second ends; and

removing said spacer layer so as to leave said membrane layer supported by said ends thereof with said electrically conductive portion spaced above said conductive part.

23. A method according to Claim 22, wherein said step of forming said spacer layer is carried out by forming a first portion of said spacer layer over said conductive part, and then forming spaced second portions of said spacer layer on said first portion thereof.

24. A method according to Claim 22, including the step of forming said base section by carrying out the steps of:

providing a substrate;

forming an oxide layer over said substrate;

forming two spaced conductive posts at spaced locations on said oxide layer, said posts being said spaced portions of said base section which support said first and second ends of said membrane layer; and

carrying out said step of forming said conductive part by forming said conductive part at a location between said posts.